REMARKS

Claim 1 has been amended to particularly point out and distinctly claim the features in accordance with the present invention wherein the engine drives "said wheels via a hydrostatic drive system of a transmission, wherein the transmission includes a gear select lever for changing a gear ratio of the transmission," the throttle control is a switch, wherein "movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state and changes the gear ratio," and wherein "the engine control circuit is connected to receive input from the throttle control switch and the speed modification switch" as supported by the original specification and drawings (page 6, lines 10-22, and Figure 2).

The present amendment adds no new matter to the instant application.

The Invention

The present invention pertains broadly to combine harvesters having a fully electronic engine for optimizing fuel consumption depending upon the operating state of the combine. More specifically, the present invention is directed to a combine harvester characterized by: (a) wheels for propelling the combine harvester over the ground; (b) an engine driving said wheels via a hydrostatic drive system of a transmission, wherein the transmission includes a gear select lever for changing a gear ratio of the transmission; (c) a manually operable throttle control switch having a plurality of positions, each position corresponding to a desired engine speed level; (d) a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state and changes the gear ratio; and (e) an engine control circuit for controlling the speed of said engine, wherein the engine control circuit is connected to receive input from the throttle control switch and the speed modification switch; the engine control circuit being responsive to input from said throttle control switch and said speed modification switch for selectively controlling said engine to run at a first speed for a given position of said throttle control when said speed modification switch is in said first state and to run at a second speed higher than said first speed when said throttle control is

in said given position and said speed modification switch is in said second state.

Various other embodiments in accordance with the present invention are described in the dependent claims. The main advantage of the embodiments in accordance with the present invention is that a combine harvester is provided having an engine speed control system that avoids power overload of harvester components (i.e., a threshing, cleaning and separation system for processing a cut crop material) and that yields optimal fuel efficiency when harvesting a crop and when operating at higher engine speeds for propelling the harvester on a roadway.

The Rejections

Claims 1 and 2 stand rejected under 35 U.S.C. 102(b) as anticipated by Cornell et al. (U.S. Patent 4,663,713). Claims 3-6 stand rejected under 35 U.S.C. 103(a) as unpatentable over Cornell et al.

Applicant respectfully traverses the rejection and requests reconsideration of the application for the following reasons.

Applicant's Arguments

The Cornell et al. reference discloses "an automatic power control for variable power train" installed in an agricultural vehicle, specifically a tractor (col. 1, lines 25-33, col. 3, lines 61-64). Cornell et al. disclose that the tractor includes a hydromechanical speed transmission (20) and a three-speed reversible range transmission (28), (see Figure 1). Speed transmission (20) is controlled indirectly by speed lever (22) via control module (24) and electrical hydraulic actuator (26). An automatic power lever (18) is provided and it appears to operate as a throttle (col. 8, lines 17-21), whereas speed lever (22) appears to effect gear reduction (col. 8, lines 22-31).

However, Cornell et al. teach that a separate range transmission (28) is provided to operate wheels (14) and that a gear shift lever (30) is a mechanical mechanism for changing gears (col. 6, lines 26-37). Microswitch (133) is provided to indicate the position of lever (30), but there is no input from transmission (28) to control module (24), (col. 7, lines 45-58).

Consequently, the Cornell et al. reference does not teach, or even suggest, a "combine harvester" that has "a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state **and** changes the gear ratio" as recited in claim 1. Furthermore, the reference teaches that the lever for changing gears of a transmission for rotating the wheels is not associated with a speed modification switch as required in claim 1.

Conclusion

Applicant has shown that the Cornell et al. reference does not anticipate the subject matter of claim 1 because Cornell et al. does not teach a "combine harvester," and does not teach, or even suggest, "a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state **and** changes the gear ratio" as recited in claim 1.

For this and all of the above reasons, the present rejection standing against the claims is untenable and should be withdrawn. In view of the present amendment, claims 1-6 are in condition for allowance and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney for the Applicant.

Respectfully submitted,

GRIFFIN & SZIPL, PC

Joerg-Uwe Szipl
Reg. No. 31,799

GRIFFIN & SZIPL, PC
Suite PH-1
2300 Ninth Street, South
Arlington, VA 22204
Telephone: (703) 979-5700
Facsimile: (703) 979-7429
Customer No.: 24203

MARKED UP VERSION SHOWING CHANGES

1. (Amended) A combine harvester having:

wheels for propelling the combine harvester over the ground;

an engine driving said wheels via a hydrostatic drive system of a transmission, wherein the transmission includes a gear select lever for changing a gear ratio of the transmission;

a manually operable throttle control switch having a plurality of positions, each position corresponding to a desired engine speed level;

a speed modification switch having a first state and a second state, wherein movement of the gear select lever from a first position to a second position switches the speed modification switch from the first state to the second state and changes the gear ratio; and;

an engine control circuit for controlling the speed of said engine, wherein the engine control circuit is connected to receive input from the throttle control switch and the speed modification switch;

said engine control circuit being responsive to input from said throttle control switch and said speed modification switch for selectively controlling said engine to run at a first speed for a given position of said throttle control when said speed modification switch is in said first state and to run at a second speed higher than said first speed when said throttle control is in said given position and said speed modification switch is in said second state.

2. (Not amended) A combine harvester as claimed in claim 1 wherein said engine control circuit comprises a programmable microprocessor.

3. (Not amended) A combine harvester as claimed in claim 1 wherein said engine control circuit comprises a programmable microprocessor having:

means for storing a first table holding work speed values, one work speed value corresponding to each position of said throttle control, and a second table holding at least

one road speed value greater than any of said work speed values;

means for accessing a work speed value from said first table when said speed modification switch is in said first state and accessing a road speed value from said second table when said speed modification switch is in said second state; and,

means responsive to an accessed a work speed value or road speed value for producing an output signal to control said engine to run at the speed represented by said accessed work speed value or accessed road speed value.

4. (Not amended) A combine harvester as claimed in claim 3 wherein said table of road speed values includes a road speed value corresponding to each position of said throttle control, the road speed value corresponding to a given position of said throttle control being greater than the work speed value corresponding to said given position of said throttle control whereby, for each position of said throttle control, said engine may be selectively controlled to run at a first speed or a second speed higher than said first speed, depending on the state of said speed modification switch.

5. (Not amended) A combine harvester as claimed in claim 3 wherein said output signal controls the rate of fuel flow to said engine.

6. (Not amended) A combine harvester as claimed in 3, further comprising other harvester components including, a threshing, cleaning and separation system powered by said engine, said work speed values being chosen so the output power of said engine does not overload said other harvester components.